# SUPPLEMENTAL
# CIVIL FUNCTIONS, DEPARTMENT OF THE ARMY APPROPRIATIONS, 1952

## HEARINGS

BEFORE THE

## SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

EIGHTY-SECOND CONGRESS

FIRST SESSION

MAKING APPROPRIATIONS FOR CIVIL FUNCTIONS ADMINISTERED BY THE DEPARTMENT OF THE ARMY FOR THE FISCAL YEAR ENDING JUNE 30, 1952

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# SUPPLEMENTAL CIVIL FUNCTIONS, DEPARTMENT OF THE ARMY, APPROPRIATIONS FOR 1952

WEDNESDAY, AUGUST 8, 1951

UNITED STATES SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
*Washington, D. C.*

The subcommittee met at 2 p. m., pursuant to call, in room F–37, the Capitol, Hon. Kenneth McKellar (chairman) presiding.

Present: Senators McKellar, Hayden, Ellender, McClellan, Young, Cordon, Ecton, and Holland.

## CORPS OF ENGINEERS

### FLOOD-CONTROL PROGRAM

### STATEMENTS OF BRIG. GEN. C. H. CHORPENING, ASSISTANT CHIEF OF ENGINEERS FOR CIVIL WORKS, AND KENNETH J. BOUSQUET, CHIEF, PROJECT PROGRAMS BRANCH, ACCOMPANIED BY FRANCIS B. SLICHTER, CHIEF, ENGINEERING DIVISION, CIVIL WORKS

#### AMOUNT FOR TUTTLE CREEK AND TORONTO DAMS, KANS., AND OOLOGAH DAM, OKLA.

Chairman MCKELLAR. The committee will come to order.

Will you proceed, Senator?

Senator MCCLELLAN. I will read the paragraph in the President's letter that has reference to this:

> In the meantime, as a step toward meeting the problem, I am now recommending that an additional $21,800,000 be appropriated to carry forward certain work that we know will be necessary. These funds will provide for work on the Tuttle Creek and Toronto Dams in Kansas and the Oologah Dam in Oklahoma, for local flood-protection work at Hutchinson and Wichita, Kans., for bank stabilization work an the Arkansas River, and for levee work on the Mississippi River between Wood River, Ill., and East Cape Girardeau, Ill.

So I guess it does include your request.

Chairman MCKELLAR. Have you seen the President's budget message?

General CHORPENING. I have not seen it; no, sir.

May I look at the letter?

Senator MCCLELLAN. Yes, sir.

Chairman MCKELLAR. He said he recommends $21,800,000, and the committee wants to know how you allotted it. We have to put in a separate section for this.

Senator MCCLELLAN. I know page 1183 in the hearings is what he submitted.

TUTTLE CREEK DAM, KANS.

Chairman McKellar. Can you tell us about the Tuttle Creek Dam?

General Chorpening. Originally we had $5 million, sir.

Chairman McKellar. What about this $21,800,000?

General Chorpening. I had not seen this letter before, Senator. May I take a minute or two to see how that adds up?

Chairman McKellar. Yes, sir.

General Chorpening. On Tuttle Creek we had recommended $5 million, sir, and we still recommend, under the amount stated in the President's letter, $5 million for construction on the Tuttle Creek Dam.

Senator Cordon. Is that what the President recommends?

General Chorpening. As I read the letter, sir, it is a total amount of $21,800,000, and I understood the chairman's question to be how much of that $21,800,000 do we recommend for it.

We recommend $5 million for Tuttle Creek Dam.

Senator Cordon. Do you know how much the President recommended?

General Chorpening. They do not break it down in this letter, sir.

Senator McClellan. I say we are handicapped here because this is just in generalities and we do not know what specific amounts.

Senator Cordon. We can take them all one after another and total them up and see if we come up at the same place.

Senator McClellan. It is perfectly apparent they do not come out the same.

Senator Knowland. How much does the list come out?

Senator McClellan. It comes out $28 million.

Let me ask you this: Can you tell, from that letter, what amount the President has submitted an estimate for for the separate projects?

General Chorpening. I believe that I know what has been taken out of the recommendations that the Corps of Engineers made to the Bureau of the Budget.

Senator McClellan. You would have to know that to testify.

General Chorpening. I think I do, sir.

Senator McClellan. Let us get that first so we will know how we are making comparisons.

Senator Cordon. You are advised, are you not, as to what action the Bureau has taken on it?

General Chorpening. Normally, we are. This estimate being handled rather rapidly, it is not quite working in the usual fashion, sir.

Senator Cordon. That is a good job of evasion.

Now, go ahead.

General Chorpening. That is factual, sir.

Tuttle Creek is $5 million, which is what we recommended, and under the amount stated here we still recommend $5 million for construction there, sir.

Chairman McKellar. All right; what is the next one?

TORONTO RESERVOIR, KANS.

General Chorpening. The next one is the Toronto Reservoir in Kansas, and we recommend $3 million there, and we still recommend $3 million.

Senator ELLENDER. Mr. Chairman, may I refer the committee to page 1184? It is all outlined there.

Senator MCCLELLAN. It is all there, but he did not allow all of that.

OOLOGAH DAM, OKLA.

Chairman MCKELLAR. What about Oologah?

General CHORPENING. We recommended $1,500,000, and we still recommend $1,500,000.

Senator ECTON. What is that for?

General CHORPENING. That is the continuation of construction on the Oologah Reservoir on the Verdigris River in Oklahoma.

Senator CORDON. That is $471,000.

General CHORPENING. That is for construction that is just barely started, a few access roads have been built. So, substantially, it is a new job.

Chairman MCKELLAR. What is the next one?

LOCAL FLOOD PROTECTION PROJECT, WICHITA AND VALLEY CENTER, KANS.

General CHORPENING. The next one, sir, is Wichita and Valley Center, Kans., a local flood-protection project, which has been started; we would allocate funds in the amount of $500,000.

Senator CORDON. Not $555,000?

General CHORPENING. That is correct, $500,000. That is at Wichita and Valley Center, in Kansas.

Senator MCCLELLAN. You cut off $55,000, did you?

General CHORPENING. Yes, sir.

Chairman MCKELLAR. Will you go to your next one, please?

LOCAL FLOOD-PROTECTION PROJECT, HUTCHINSON, KANS.

General CHORPENING. The next one is Hutchinson, Kans., a local flood-protection project, where funds in the amount of $1,900,000 are required.

Senator MCCLELLAN. Do you still stand on that?

General CHORPENING. Yes, sir.

Chairman MCKELLAR. Will you proceed to your next one?

MISSISSIPPI RIVER LEVEES

General CHORPENING. The next item is the Mississippi River levees. Those will remain the same as were listed before in all instances. It will not be necessary for me to read those again.

Senator CORDON. It is $1 million for the Perry County levee. Is that in addition to what is in the budget now?

General CHORPENING. No, sir. All of these are for the same sums as we asked the budget.

That is what we are proposing out of the $21,800,000.

Senator CORDON. But in addition to what was in the regular budget?

General CHORPENING. Nothing is in the regular budget in Perry County.

Senator MCCLELLAN. To get this straight: When you say all of the Mississippi River levees in your table here, does that take in first

the $1,500,000, then the $900,000, then $1,000,000, then $800,000, then $400,000?

General CHORPENING. That is correct.

Senator MCCLELLAN. Then does it take in the $500,000 for East Cape Girardeau?

General CHORPENING. Yes, sir.

Senator MCCLELLAN. So it includes all of those, does it?

General CHORPENING. Yes, sir.

Senator MCCLELLAN. They are all in, are they?

General CHORPENING. Yes, sir.

Senator MCCLELLAN. Up to that point there has been a difference of only fifty-five thousand; is that correct?

General CHORPENING. That is correct, sir.

Senator ELLENDER. General, you say you suspect that some were eliminated by the President.

General CHORPENING. Yes, sir.

Senator ELLENDER. Will you tell us which they are?

General CHORPENING. None of these that I have stated so far.

Senator CORDON. May I interrupt you for a minute?

You have Prairie du Rocher and vicinity, Illinois, and here I find Prairie du Rocher and vicinity, Illinois, in the list.

Mr. BOUSQUET. But there was no budget estimate for that project for fiscal year 1952 until today.

Senator CORDON. It was $100,000 last year. There is no budget estimate this year, and $900,000 over here. So it is this item in the list.

Mr. BOUSQUET. That is right sir.

Senator YOUNG. Does this include East Cape Girardeau?

General CHORPENING. Yes, sir.

Senator YOUNG. The only cut is in the $555,000 at Wichita Valley Center, Kans.?

General CHORPENING. Yes, sir.

Senator MCCLELLAN. That is the only change in all of them?

General CHORPENING. Yes, sir.

### BANK STABILIZATION, ARKANSAS RIVER

Now, on the bank stabilization on the Arkansas River, that is $4,100,000.

Senator MCCLELLAN. Instead of $4,090,000?

General CHORPENING. Yes, sir.

Senator CORDON. Is that the Red River levees and bank stabilization?

General CHORPENING. No, sir, that is the Arkansas River item.

Senator CORDON. That is what I am looking at. There is an appropriation of $500,000 in 1951 and outside people asked for $1 million. What is your budget estimate now?

General CHORPENING. $4,100,000.

Chairman MCKELLAR. All right, sir, what is the next one?

General CHORPENING. That is all of the construction items.

Now, for planning, we would like funds for Topeka, Kans., to plan the north unit of the local protection project, in the amount of $70,000.

POMME DE TERRE RESERVOIR, MO.

On the Pomme de Terre Reservoir in Missouri, on the Osage River, we would like $305,000.

Senator ELLENDER. That is 20 thousand less than what you had before.

General CHORPENING. Yes, sir.

STRAWN RESERVOIR, KANS.

Next is the Strawn Reservoir in Kansas, on the Neosho River, $250,000.

CAPE GIRARDEAU LEVEE, MISSOURI

Then there is Cape Girardeau, Mo., a local flood-protection project, where $75,000 is requested.

That adds up to $700,000 even on planning, and if my arithmetic is correct, all of those amounts will add up to the $21,800,000 mentioned in the letter of the President.

Senator YOUNG. What did you request the President? The amount of $37 million?

General CHORPENING. Yes, sir. But that included $15 million on our emergency money, which you will recall I mentioned yesterday.

We do have funds now to carry on the immediate program and with what is being appropriated in the regular bill will take care of the known repairs to levees but there will be no reserve for repairs in other parts of the country.

AMOUNT FOR NAVIGATION FACILITIES, MISSOURI

We also asked for a supplemental of $5 million under maintenance for work on the stretch of river from Kansas City to St. Louis in order to go in and repair our navigation structures that have been very badly mauled in this flood. That, likewise, has been taken out.

Senator ELLENDER. General, as to the planning money, is that in addition to what you requested of the budget?

General CHORPENING. Yes, sir.

Senator ELLENDER. And which they allowed you?

General CHORPENING. That is correct, sir.

This is in addition to the regular budget estimate. This is a supplemental request.

May I say that all of these projects are tied in directly with the catastrophe that has just occurred out there. It is General Pick's idea of a reasonable start to get some work done on correcting a situation that created great havoc during this last flood.

TUTTLE CREEK RESERVOIR

Senator ELLENDER. Let us take the Tuttle Creek Reservoir. Have you the plans and the specifications so worked up that you can start immediately on construction?

General CHORPENING. Yes, sir. We have had planning money there and the plans and specifications for the initial work are well along. So that we believe we can get into construction there very promptly, of course, some of the money requested will be used to plan additional units of work.

Senator ELLENDER. And that applies to all other projects you just mentioned, does it?

General CHORPENING. That is correct; for all projects where we have asked for construction money.

Senator CORDON. On Tuttle Creek, you are asking that money to plan an $80 million reservoir.

General CHORPENING. However, remember this has been authorized a long time, and the Corps of Engineers for a long time has known about the necessity of building this project. So we have given more thought to it than we had on some others that may have been authorized for only a short time. We are in a position to go ahead on that project.

Senator HAYDEN. It is an earth dam; is that correct?

General CHORPENING. It is an earthen dam, that is correct. It is not a concrete structure and there is no power in there. So it is a much simpler structure than we would have, for instance, on some of those very large ones up in your country, Senator Cordon.

Senator CORDON. I am thinking about 160 miles of the Klamath River caving in every day with $100,000 for bank protection.

Chairman MCKELLAR. Are there any other questions, gentlemen?

General, could we ask you to wait outside a little while? We may want to call you again.

General CHORPENING. Yes, sir.

Senator ELLENDER. Has the justification for each of these projects been put in the recod?

Mr. BOUSQUET. We will submit that for the record.

General CHORPENING. This is a pretty hurry-up thing. Until we knew what was going to come over we were not in a position to prepare them. They are being prepared this afternoon. We will have them this afternoon.

Senator CORDON. Will they be in such shape so that the chairman, when he presents the bill on the floor, can include that in the record?

General CHORPENING. Yes, sir.

Chairman MCKELLAR. All right, sir.

(The material referred to is as follows:)

JUSTIFICATION OF ESTIMATE

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| East Cape Girardeau and Clear Creek drainage district, Illinois | $1,522,000 | $778,000 | $500,000 | $244,000 |

*1951 appropriation.*—$200,000.

*Authorization.*—1936 Flood Control Act.

*Location and description.*—A levee system for the protection of the East Cape Girardeau and Clear Creek drainage district located in Alexander County, Ill., on the left bank of the Mississippi River between river miles 46 and 57 above the mouth of the Ohio River. The project consists of reconstruction of approximately 10 miles of river-front levee and 0.9 mile of back levee, extension of gravity drainage structures, surfacing of access road on levee crown, making necessary alterations to one existing railroad closure structure, and construction of one highway closure structure. The project is presently scheduled for completion in fiscal year 1953.

*Operations*

| Item | Total estimated cost June 30, 1951 | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Engineering, plans, specifications and surveys | $89,400 | $49,100 | $26,600 | $13,700 | 0 |
| Repairs prior to completion of the project | 36,000 | 0 | 1,300 | 16,300 | $18,400 |
| Preparation of maintenance manuals | 2,050 | 1,100 | 0 | 0 | 950 |
| Model studies | 20,600 | 0 | 900 | 9,000 | 10,700 |
| Levee embankment | 1,003,000 | 427,800 | 241,200 | 334,000 | 0 |
| Gravity drainage structures | 59,000 | 17,000 | 0 | 42,000 | 0 |
| Access road | 85,000 | 0 | 0 | 85,000 | 0 |
| Closure structures | 32,000 | 13,000 | 0 | 0 | 19,000 |
| Seepage corrective measures | 160,000 | 0 | 0 | 0 | 160,000 |
| Contingencies | 34,950 | 0 | 0 | 0 | 34,950 |
| Total | 1,522,000 | 508,000 | 270,000 | 500,000 | 244,000 |
| Percentage of completion | | 33 | 51 | 84 | 100 |

*Justification.*—The project will substantially protect the East Cape Girardeau and Clear Creek drainage district. This project and the authorized work in the Preston drainage and levee district, the Clear creek drainage and levee district, the Miller Pond drainage district, and the North Alexander County drainage district will provide protection to an area of 51,500 acres against a flood having an estimated frequency of once in 50 years. The estimated average annual benefits for these projects amount to $404,100. All the districts mentioned above were completely or partially inundated by the 1943 and 1944 floods. Total damages inflicted by these floods are estimated to be $1,038,000 for the East Cape Girardeau and Clear Creek drainage district alone and for all five districts the damages are estimated to have been $5,285,000.

The allocation of $500,000 for the fiscal year 1952 will complete all construction work required for the project with the exception of alterations to one existing closure structure and seepage corrective measures. The work proposed will complete the river-front levee of a flood-control system consisting of five local levee districts protecting approximately 51,500 acres of agricultural lands. The proposed allocation will complete the river-front levee of this system. This project affords protection to the main line track of the Missouri Pacific Railroad connecting the Southwestern with the St. Louis rail set-up. This track is used jointly by the Missouri Pacific Railroad Co. and the St. Louis Southwestern Railway lines (Cotton Belt route), which was reported to have carried more national defense tonnage during the last war on this section of track than on any other similar track in the United States. During the period of the last war, rail service on this line was interrupted in both 1943 and 1944 by high water flows of the Mississippi, which resulted in delay in the delivery of material vital to the war effort. The project also affords protection to a powder plant located near Wolf Lake, Ill., and to a gasoline and fuel oil tank farm used for storage and distribution to barge lines and railroads.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Perry County drainage and levee districts Nos. 1, 2, and 3, Missouri | $7,262,000 | $1,949,400 | $1,000,000 | $4,312,600 |

*1951 appropriations.*—$300,000.

*Authorization.*—1936 Flood Control Act.

*Location and description.*—A levee system for the protection of the Perry County levee districts Nos. 1, 2, and 3, located in Perry County, Mo., and Randolph County, Ill., on the right bank of the Mississippi River between river miles 94 and 111 above the mouth of the Ohio River. The project consists of raising and enlarging the existing levee system by reconstruction of 3.8 miles of existing upper flank levees, 7.9 miles of existing river-front levees, and 14.1 miles of existing back levees; construction of 7.3 miles of new river-front levees, together with the necessary gravity drainage structures; surfacing of 33.1 miles of access road on crown of

levee; construction of two highway closure structures, and raising of the tracks at two levee crossings of the St. Louis-San Francisco Railroad. The project is presently scheduled for completion in fiscal year 1956. If the amount of $1,000,000 requested above is made available for fiscal year 1952, it is believed that the completion date can be advanced 1 year to the fiscal year 1955 provided that adequate funds required for an orderly construction program are made available for the fiscal year 1953, 1954, and 1955.

*Operations*

| Item | Total cost | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Engineering, plans, specifications, and surveys | $445,000 | $171,700 | $39,300 | $50,000 | $184,000 |
| Repairs prior to completion of the project | 71,700 | 700 | 14,000 | 30,000 | 27,000 |
| Levee embankment | 5,076,000 | 1,346,900 | 179,100 | 920,000 | 2,630,000 |
| Gravity drainage structures | 270,000 | 119,800 | 19,200 | ---------- | 131,000 |
| Preparation of maintenance plans | 7,600 | ---------- | 4,600 | ---------- | 3,000 |
| Model studies | 68,100 | ---------- | 12,100 | ---------- | 56,000 |
| Engineering and design after award of contract | 9,300 | ---------- | ---------- | ---------- | 9,300 |
| Access road, surveys | 280,000 | 10,300 | 31,700 | ---------- | 238,000 |
| Closure structures | 87,000 | ---------- | ---------- | ---------- | 87,000 |
| Railroad alteration | 374,000 | ---------- | ---------- | ---------- | 374,000 |
| Seepage corrective measures | 320,000 | ---------- | ---------- | ---------- | 320,000 |
| Contingencies | 253,300 | ---------- | ---------- | ---------- | 253,300 |
| Total | 7,262,000 | 1,649,400 | 300,000 | 1,000,000 | 4,312,600 |
| Percentage of completion | ---------- | 23 | 27 | 41 | 100 |

*Justification.*—The project will provide protection against a flood of 50-year frequency for approximately 26,050 acres of highly productive agricultural land. The population of the area is about 500. The towns of Claryville, Belgique, and McBride, Mo., are within these districts. The average annual benefits for the project are estimated to be $389,800. The 1943 flood inundated these districts through a crevasse in a portion of the levee which has not been reconstructed, and extensive flood-fighting work was required in 1944, 1947, and 1951 to keep the levee system intact. The flood of 1943 caused approximately $1,686,000 damages when the entire protected area was inundated.

The allocation of $1,000,000 requested for the fiscal year 1952 is needed for the continuation of the orderly construction program for the project. This amount will be used for the reconstruction of approximately four miles of existing substandard levee along the upper flank of the project and for completion to design grade of reconstruction of approximately 2.1 miles of existing substandard river-front levee necessary to tie the upper river-front levee now under construction with that portion of the lower river-front levee constructed to an interim grade, prior to 1941. During the floods of 1944, 1947, and 1951 considerable emergency work was required to keep the upper flank levee intact. During 1951 extensive sandbagging was required along the upper flank to prevent overtopping. The lower river-front on which construction work is proposed is considered as a potential danger reach during high stages of the Mississippi River as considerable seepage was experienced during 1947 and 1951. It is believed that an urgent need exists for the continued prosecution of construction on this project, as the repeated floods during the spring and summer months since 1943 have emphasized the seriousness of the flood problem along the two different reaches of levees on which work is proposed. As the other authorized levee projects above and below on the opposite side of the river approach completion, it may be expected that floods of a given volume of flow will reach greater heights than heretofore due to confinement of the river between levees and the elimination of valley storage thereby further aggravating the problem now existing.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Prairie du Rocher and vicinity, Illinois | $3,807,000 | $2,200,000 | $900,000 | $707,000 |

*1951 appropriations.*—$3,807,000.

*Authorizations.*—1946 Flood Control Act.

*Location and description.*—A levee system for the protection of the Prairie du Rocher and Modoc drainage and levee district and the Eager Lakes drainage and levee district, located in Randolph County, Ill., south of Prairie du Rocher, Ill., on the left bank of the Mississippi River between river miles 118 and 130 above the mouth of the Ohio River. The project consists of about 2.9 miles of upper flank levee, 10.4 miles of riverfront levee, and 2.8 miles of lower flank levee, and the construction of appurtenant works consisting of gravity drainage structures, highway and railroad closure structures, surfacing of access road on the levee crown, and altering railroad tracks at one levee crossing. The project is presently scheduled for completion in fiscal year 1955.

*Operations*

| Item | Total cost | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Engineering, plans, specifications, and surveys | $291,000 | $224,000 | $34,000 | $33,000 | 0 |
| Repairs prior to completion of the project | 133,000 | 38,500 | 31,500 | 25,000 | $38,000 |
| Preparation of maintenance manual | 5,100,000 | 200 | | | 4,900 |
| Model studies | 30,400 | 16,200 | | 10,400 | 4,200 |
| Engineering and design after award of contract | 12,500 | 4,000 | | 6,000 | 2,500 |
| Levee embankment | 2,173,000 | 1,198,000 | | 734,000 | 241,000 |
| Access road surfacing | 97,000 | 48,500 | 7,500 | | 46,000 |
| Gravity drainage structures | 390,000 | 227,000 | | 92,000 | |
| Seepage corrective measures | 256,000 | | | | 256,000 |
| Closure structures | 155,000 | 93,000 | 27,000 | | 35,000 |
| Railroad alterations | 250,000 | 250,000 | | | |
| Contingencies | 85,000 | 5,600 | | | 79,400 |
| Total | 3,807,000 | 2,100,000 | 100,000 | 900,000 | 707,000 |
| Percentage complete | | 55 | 58 | 81 | 100 |

*Justification.*—The project will provide protection to the area against a flood of 50-year frequency. The area to be protected contains approximately 16,000 acres of highly productive agricultural lands. The population of the area which includes the towns of Prairie du Rocher and Modoc, Ill., is about 1,200. The average annual benefits for the project are estimated to be $287,000. The floods of 1943, 1944, 1945, and 1947 partially or entirely inundated the area. Total damages inflicted by these floods, together with a flash flood that occurred on Prairie du Rocher Creek due to excessive rainfall in August 1946, are estimated at $1,955,000. The flood of 1951 also inundated a major portion of the area to be protected. Actual cost of damages inflicted has not yet been completed, but it is estimated to be over $500,000. In view of frequent floodings of this area, this project is urgently needed.

The allocation of $900,000 requested for the fiscal year 1952 is needed for the continuation of the orderly construction program of this project. This amount will be used for construction of approximately 3.4 miles of new lower river front levee and approximately 0.6 mile of upper flank levee along Prairie du Rocher Creek.

This amount will complete the closure of the river front levee and the lower flank levee on which construction work is essentially completed. Until such time as this closure is effected, flood flows of approximately 4-year frequency will interrupt rail traffic on the main line of the Missouri Pacific Railroad connecting the Southwest with the St. Louis rail center. Completion of the work proposed above for the fiscal year 1952, together with that now under construction, will provide protection to the entire project with the exception of seepage corrective measures, construction of one small closure structure, and construction of additional land-side berms where seepage studies may indicate the need therefor. It is believed desirable that this work be prosecuted during the fiscal year 1952 to provide protection to the agricultural area, the town of Prairie du Rocher, and the Missouri Pacific Railroad. During the period of the last war, rail service on the Missouri Pacific line was interrupted in both 1943 and 1944 by high water flows of the Mississippi River which resulted in the delay in delivery of war

material and caused traffic congestion in terminal operations at Memphis, Tenn., due to the rerouting of traffic on other rail lines. The recent flood of July 1951 also interrupted traffic on this rail line. This track is jointly used by the Missouri Pacific Railroad and the St. Louis-Southwestern Railway line (the Cotton Belt route), reported to have carried more national defense tonnage during the last war than any other similar track in the United States.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Columbia drainage and leveel district, Illinois | $2,542,000 | $1,830,100 | $400,000 | $311,900 |

*1951 appropriation.*—None.

*Authorization.*—1936 Flood Control Act.

*Location and description.*—Construction of a levee system for protection of the Columbia drainage and levee district located in Monroe County, Ill., on the left bank of the Mississippi River between river miles 157 and 167 above the mouth of the Ohio River. This project consists of raising and enlarging the existing levee system by reconstruction of 10.4 miles of river-front levee and 9.1 miles of flank levees along the Columbia and Fountain Creeks, and the construction of appurtenant work consisting of extension of gravity drainage structures, surfacing 19.5 miles of access road on the levee crown and alternating railroads at two levee crossings. The project is scheduled for completion in fiscal year 1954.

*Operations*

| Item | Total estimated cost | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Engineering | $225,800 | $189,000 | 0 | $27,800 | 0 |
| Repairs prior to completion | 42,300 | 32,600 | 0 | 9,700 | 0 |
| Model studies | 14,100 | 9,000 | 0 | 5,100 | 0 |
| Preparation of maintenance manual | 3,500 | 2,500 | 0 | 0 | $1,000 |
| Levees embankment | 1,470,500 | 1,227,000 | 0 | 243,500 | 0 |
| Access road surfacing | 131,600 | 75,000 | 0 | 56,600 | 0 |
| Gravity drainage structures | 97,500 | 89,000 | 0 | 8,500 | 0 |
| Railroad alteration | 415,900 | 197,000 | 0 | 40,000 | 178,900 |
| Seepage corrective measures | 106,800 | 0 | 0 | 0 | 106,800 |
| Contingencies | 34,000 | 0 | 0 | 8,800 | 25,200 |
| Total | 2,542,000 | 1,830,100 | 0 | 400,000 | 311,900 |
| Percentage of completion | | 72 | 72 | 88 | 100 |

*Justification.*—The project will provide protection to the district against a flood of 50-year frequency. The district contains approximately 13,800 acres of highly productive agricultural lands. The population is about 500. The estimated average annual benefits for this project amount to approximately $148,100. It is estimated that the construction work to the interim grade and section, which was essentially completed prior to the 1943, 1944, and 1947 floods, prevented damages to the district in the amount of $2,359,000 which would have been sustained from these floods.

The allocation of $400,000 is required to permit the orderly construction of the project. This amount will complete the entire project to the design grade and section with the exception of the completion of alteration of the railroad tracks across the upper flank levee and construction of seepage corrective measures. It is believed desirable that this work be accomplished due to the fact that the flank levee of the adjacent project on the south is completed, and in the event that high water should occur, the uncompleted portion of this project would be subject to overtopping due to the confinement of the tributary flows by the other projects. The gap left where the railroad is to be altered could be sandbagged in time of high water with little effort, thus making the entire project effective. Alterations to the railroad and this levee crossing is part of the program to provide protection to the Missouri Pacific Railroad track, East St. Louis to Thebes, Ill. This track is used jontly by the Missouri Pacific Railroad Co. and the St. Louis South-

ern Railroad lines, Cotton Belt Route, which is reported to have carried more national defense tonnage during the last war than any other similar track in the United States.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Grand Tower drainage and levee district, Illinois | $4,446,000 | $2,199,700 | $800,000 | $1,446,300 |

*1951 appropriation.*—$200,000.

*Authorization.*—1938 Flood Control Act.

*Location and description.*—A levee system for the protection of Grand Tower, Ill., within the Grand Tower drainage and levee district located in Jackson County, Ill., and Perry County, Mo., on the left bank of the Mississippi River between river miles 75 and 84 above the mouth of the Ohio River. The project is bound by the Mississippi River on the west, Big Muddy River on the south and southwest, Fountain Bluff on the northwest, and the Degognia and Fountain Bluff levee and drainage district on the north, and consists of raising, enlarging, and extending the existing levee system by construction of 5.3 miles of new river-front levee; construction of 1.7 miles of new lower flank levee; reconstruction of 4 miles of lower flank and back levee along Big Muddy River; construction of 6.2 miles of new back levee along Big Muddy River; construction of two closure structures; surfacing of approximately 16.1 miles of access road; construction of two railroad closure structures on Illinois Central Railroad; and alteration to Missouri Pacific Railroad tracks at one levee crossing. The project is presently scheduled for completion in fiscal year 1955. If the amount of $800,000 is made available for the fiscal year of 1952, it is estimated that the project could be completed in the fiscal year of 1954 provided that sufficient funds are made available for the fiscal year of 1953 and 1954.

*Operations*

| Item | Total estimated cost | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Engineering | $329,400 | $166,500 | $46,500 | $40,000 | $76,400 |
| Repairs prior to completion | 102,300 | | 23,000 | 30,000 | 49,300 |
| Preparation of maintenance manuals | 40,100 | | | | 40,100 |
| Levee embankment | 2,661,000 | 1,483,500 | 95,000 | 397,000 | 685,500 |
| Model studies | 35,600 | 10,000 | 5,500 | | 20,100 |
| Engineer and design after award of contract | 10,200 | | 2,000 | | 8,200 |
| Gravity tonnage structures | 470,000 | 170,000 | | 150,000 | 150,000 |
| Access road surfacing | 108,000 | | 28,000 | 45,000 | 35,000 |
| Railroad alterations | 191,000 | 93,000 | | 98,000 | |
| Seepage corrective measures | 320,000 | | | | 320,000 |
| Closure structures | 78,000 | 38,000 | | 40,000 | |
| Highway alterations | 38,000 | 38,000 | | | |
| Contingencies | 62,400 | 700 | | | 61,700 |
| Total | 4,446,000 | 1,999,700 | 200,000 | 800,000 | 1,446,300 |
| Percentage of completion | | 45 | 49 | 67 | 100 |

JUSTIFICATION.—The project in combination with Degognia and Fountain Bluff levee project will provide protection to about 47,400 acres of land against a flood of 50-year frequency. The population of the district, including the town of Grand Tower, Ill., is approximately 1,200. The average annual benefits for this project amount to approximately $255,000. The floods of 1943, 1944, 1945, and 1947 inundated these lands, and the flood of 1951 also inundated the major portion of the area, by over-topping the existing substandard levees. Total damages inflicted by these floods are estimated at $662,000. Actual costs of damages inflicted by the flood of 1951 have not as yet been compiled but is believed to be in excess of $300,000.

The allocation of $800,000 requested for the fiscal year of 1952 is needed for the continuation of the construction program of the project. This amount will be used for the construction of approximately 3.2 miles of new flank levee along Big

Muddy River, construction of a closure structure on the open front levee above the town of Grand Tower, Ill., and for the surfacing of access roads on levees scheduled for completion during the fiscal year of 1952. This amount of funds will assure scheduled completion of the project for the fiscal year 1954 provided that funds in approximately the same amount will be provided during the fiscal years of 1953 and 1954. It is believed that this project should be continued with the ultimate completion date of 1954 in as much as it will afford protection to the main-line track of the Missouri Pacific Railroad connecting the Southwest with the St. Louis rail center. This track jointly used by the Missouri Pacific Railroad and the St. Louis Southwest Railroad Line (Cotton Belt Route), is reported to have carried more national-defense tonnage during the last war than any other similar track in the United States. During the period of the last war, rail service on the line was interrupted both in 1943 and 1944 by high-water flows of the Mississippi which resulted in delay in the delivery of material vital to the war effort.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Wood River drainage and levee district, Illinois | $12,152,000 | $5,486,000 | $1,500,000 | $5,166,000 |

*1951 appropriation.*—$280,000.

*Authorization.*—1938 Flood Control Act.

*Location and description.*—A levee system for the protection of the Wood River drainage and levee district located in Madison County near Alton, Ill., on the left bank of the Mississippi River between river miles 195 and 203 above the mouth of the Ohio River. The project provides for raising, enlarging, and extending the existing levee system, and includes the reconstruction of 5.4 miles of existing flank levee along Wood River; 2.6 miles of existing lower flank levee along Cahokia diversion channel; and 0.6 mile of existing lower flank along Indian Creek; construction of 2.0 miles of new flank levee along Wood River; 8.1 miles of new river-front levees along the Mississippi River; and 1.4 miles of new lower flank levee along the Cleveland, Cincinnati, Chicago, and St. Louis Railroad; together with the necessary appurtenant works consisting of gravity drainage structures, highway, and railroad closure structures, alterations to existing or construction of new pumping plants, surfacing of access road on the levee crown, making necessary alterations to railroad tracks and bridges at levee crossings, construction of a low water dam at the mouth of Wood River, and construction of approximately 350 linear feet of concrete flood wall on Wood River stream. The project is presently scheduled for completion in fiscal year 1957.

*Operations*

| Item | Total cost | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Engineering | $843,000 | $539,000 | $30,000 | $75,000 | $199,000 |
| Repairs prior to completion | 204,000 | 27,500 | 39,500 | 40,000 | 97,000 |
| Preparation of Maintenance Manual | 11,500,000 | 1,000 | 0 | 0 | 10,500 |
| Engineering and design after award of contract | 25,500 | 0 | 3,000 | 0 | 22,500 |
| Model studies | 80,000 | 8,500 | 7,500 | 0 | 64,000 |
| Levee embankment | 4,586,000 | 2,753,000 | 166,000 | 860,000 | 789,000 |
| Access road surfacing | 198,000 | 16,000 | 0 | 0 | 183,000 |
| Gravity drainage structure | 1,162,000 | 306,000 | 34,000 | 0 | 822,000 |
| Closure structures | 447,000 | 148,000 | 0 | 0 | 299,000 |
| Pumping plant | 2,168,000 | 593,000 | 0 | 525,000 | 1,050,000 |
| Railroad alteration | 1,323,000 | 0 | 0 | 0 | 1,323,000 |
| Low-water dam | 713,000 | 713,000 | 0 | 0 | 0 |
| Floodwall | 97,000 | 97,000 | 0 | 0 | 0 |
| Contingencies | 312,000 | 4,000 | 0 | 0 | 308,000 |
| Total | 12,152,000 | 5,206,000 | 280,000 | 1,500,000 | 5,166,000 |
| Percentage of completion | | 42.8 | 45.1 | 57.5 | |

*Justification.*—The project will provide protection to approximately 13,700 acres of which 7,500 acres is highly developed industrial area and in which are located the important industrial cities of Hartford, Wood River, Roxana, and East Alton, Ill. During the past 8 years, portions of the area have been inundated by the floods of 1943, 1944, and 1947. Total damages inflicted by these floods, together with a flash flood that occurred on Wood River due to excessive rainfall in August 1946, is estimated at $1,320,000. Portions of the area were also inundated by the flood of 1951, however, the damages inflicted were not as great as those of previous floods, because of the advancement of construction on the project. The average annual benefits to be derived from this project are estimated at $692,000.

The sum of $1,500,000 is needed for the continuation of the orderly construction program for the project during fiscal year 1952. This amount will extend the completion of the lower river front levee to tie within an existing levee along Cahokia diversion channel. This extension will provide protection to the city of Hartford, Ill., for which little or no protection now exists. Approximately $55,000 is required for the construction of two small lift pumping stations for the area where interior drainage will be ponded by levees under construction along Wood River and scheduled for completion in 1952. Approximately $470,000 will be required in order that the levee embankment and a pumping plant may be constructed simultaneously since the interior drainage of the protected area will not be possible by gravity flow. Construction of this pumping plant is deemed highly desirable inasmuch as both storm water and sanitary sewage flows from adjacent urban areas will be pumped at this location. Several industries producing defense material, such as the Alton Box Board Co., Western Cartridge Co., Owens-Illinois Glass Co., the Shell Refinery and Socony-Vacuum Oil Co., are located within the area to be protected. The area to be protected has a valuation in excess of $400,000,000 and in the event of a major flood, disastrous flood damages would be sustained by these important industrial facilities.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Hutchinson, Arkansas River, Kans. | $4,726,000 | $280,000 | $1,900,000 | $2,546,000 |

*1951 appropriation.*—None.

*Authorization.*—Flood Control Act of June 22, 1936.

*Location and description.*—The project is located on the Arkansas River and Cow Creek in the immediate vicinity of Hutchinson, Kans. A leveed diversion canal located about 1 mile west of the city limits will intercept Cow Creek and carry floodwaters from the creek to the Arkansas River. The combined flows will be carried past the city between levees on both sides of the Arkansas River. Other appurtenant works include loop levee and enlargement of existing levees.

Average height of levees: 9.3 feet.
Length of levees: 27.1 miles.
Length of channel: 1.8 miles.
Width of channel: 300 feet.
Completion date: fiscal year 1954.

*Operations*

| Item | Total cost (current estimate) | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Construction, engineering and design | $274,710 | $233,825 | 0 | $20,000 | $20,885 |
| Construction: | | | | | |
| Lot I | 160,000 | 0 | 0 | 0 | 160,000 |
| Lot II, continuing contract | 1,046,175 | 46,175 | 0 | 430,000 | 570,000 |
| Lot III | 180,000 | 0 | 0 | 0 | 180,000 |
| Island Park Ring levee | 50,115 | 0 | 0 | 0 | 50,115 |
| Relocations: | | | | | |
| Atchison, Topeka & Santa Fe R. R., lot I | 31,000 | 0 | 0 | 0 | 31,000 |
| Missouri-Pacific R. R., lot I | 31,000 | 0 | 0 | 0 | 31,000 |
| Missouri-Pacific R. R., lot II, continuing contract | 1,015,000 | 0 | 0 | 500,000 | 515,000 |
| Chicago, Rock Island & Pacific Ry., lot II continuing contract | 1,077,000 | 0 | 0 | 500,000 | 577,000 |
| Atchison, Topeka & Santa Fe R. R., Lot II | 796,000 | 0 | 0 | 450,000 | 346,000 |
| Chicago, Rock Island & Pacific Ry., lot III | 65,000 | 0 | 0 | 0 | 65,000 |
| Total | 4,726,000 | 280,000 | 0 | 1,900,000 | 2,546,000 |
| Percentage of completion | | 6 | 6 | 46 | 100 |

*Justification.*—The project will provide protection to 17,590 acres of highly developed urban and suburban properties at and in the vicinity of Hutchinson, Kans. Principal transportation facilities into Hutchinson consist of one Federal and three State highways; two transcontinental railroads, and one secondary rail line. The city has a wide diversity of industrial and commercial interests. It is a major salt-producing center with an annual capacity of over 15,000 carloads, and is a major wheat market with 12 grain storage elevators having a capacity of 11,210,000 bushels. Other industrial activities include the milling of flour, distribution of oil-field equipment, manufacture of fiber products, and meat packing. The Cessna Aircraft Co., now employed in performance of important subcontract work for the Boeing Airplane Co. of Wichita, is located at Hutchinson. With the exception of salt mines and salt-processing plants, the above industries are located in the flood plain. Commercial properties consist of approximately 200 retail and wholesale business houses, 274 miscellaneous commercial and professional services, and 28 recreational enterprises.

Damages within the city of Hutchinson are caused primarily by floods on Cow Creek and, to a lesser extent, by floods on the Arkansas River. Major floods occurred at Hutchinson in July 1929, October 1941, and August 1950. The estimated damages from the July 1929, October 1941, and August 1950 floods are $2,500,000, $2,000,000, and $800,000, respectively. In addition, during the latter part of May through June, and for the first half of July 1951, the Arkansas River at Hutchinson was continually above or near bankfull stage; however, Cow Creek, the main contributor to floods in Hutchinson, did not reach high stages and, for that reason, losses were comparatively minor. Local rains over Cow Creek watershed, even of only moderate intensity, would have caused very large damages during this period because of high stages on the Arkansas River. Industries engaged in defense work lost an estimated 430 man-days of time during the 1951 high stages due to absenteeism arising from flood conditions. The city of Hutchinson has been repeatedly threatened by high stages on the Arkansas River which did not materialize into serious floods for the reason that Cow Creek was not simultaneously at high stages. These conditions have caused an unestimated large expense to local interests for sandbagging operations and other flood-protection activities. Completion of the authorized project for flood control at Hutchinson would have prevented all of the above-described losses.

The city of Hutchinson has provided the Federal Govrnment with the required assurances of local cooperation and has set up an organization to acquire land and meet other obligations of local cooperation. In preparation for construction of lot II, the principal portion of the project, the city has acquired the necessary rights-of-way, has evicted residents from and cleared the rights-of-way, has secured the necessary assurances from the State of Kansas that highways would be relocated in accordance with the plan for the project, and has contracted with

utility companies or initiated construction for relocation of various utilities. The city's expenditures and binding commitments exceed $600,000 at the present time.

The current benefit to cost ratio for the Hutchinson project is 1.37.

The $1,900,000 requested for fiscal year 1952 will be applied to the initiation of construction on lot II and initiate relocations for the Missouri-Pacific; Chicago, Rock Island & Pacific; and Atchison, Topeka & Santa Fe Railroads, all in lot II.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Toronto Reservoir, Verdigris River, Kans. | $15,550,000 | $260,000 | $3,000,000 | $12,290,000 |

*1951 appropriation.*—$40,000 (for planning only).

*Authorization.*—Flood Control Act of August 18, 1941.

*Location and description.*—The Toronto Dam site is located on the Verdigris River at mile 271.5, about 4 miles south of Toronto, Kans. The plan of improvement provides for flood control and water conservation in the Verdigris Basin by the construction of an earth-fill dam, with gated concrete spillway located near the right abutment.

Height above stream bed: 85 feet.
Length of earth embankment: 3,400 feet.
Length of spillway: 502 feet.
Power installation: None.
Scheduled closure date: November 1955.
Scheduled completion date: Fiscal year 1956.

| Item | Total cost (current estimate) | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Construction, engineering and design | $583,000 | $220,000 | $40,000 | $100,000 | $223,000 |
| Earth embankment and excavation for spillway by continuing contract | 1,029,000 | 0 | 0 | 1,029,000 | 0 |
| Completion of embankment and construction of spillway by continuing contract | 8,306,000 | 0 | 0 | 0 | 8,306,000 |
| Administration and maintenance building by continuing contract | 92,000 | 0 | 0 | 92,000 | 0 |
| Overlook building | 15,000 | 0 | 0 | 15,000 | 0 |
| Operator's quarters | 33,000 | 0 | 0 | 0 | 33,000 |
| Other construction items | 566,000 | 0 | 0 | 50,000 | 516,000 |
| Lands and damages | 1,966,000 | 0 | 0 | 500,000 | 1,466,000 |
| Relocation of railroads, highways and utilities by continuing contract | 2,960,000 | 0 | 0 | 1,214,000 | 1,746,000 |
| Total | 15,550,000 | 220,000 | 40,000 | 3,000,000 | 12,290,000 |
| Percentage of completion | | 1.4 | 1.7 | 21 | 100 |

*Justification*—The Toronto Reservoir is a unit in the system of six reservoirs in the Verdigris River Basin in Kansas and Oklahoma for flood control, supplemental water supply, pollution abatement, and other conservation uses. Construction of the Toronto Reservoir is the next logical step in the orderly completion of the authorized system. Operation of this project in conjunction with the recently completed Fall River Reservoir, located on a major upstream tributary of the Verdigris River, and the recently completed Hulah Reservoir, on a major lower basin tributary, will provide urgently needed flood protection for fertile farm land and communities in the Verdigris and Arkansas River flood plains. Major areas in the Verdigris River flood plain have been abandoned or cropping practices changed to lower value crops due to high frequency and severity of flooding.

A total of 62 floods has occurred on the Verdigris River at Independence, Kans., during the past 28 years and during the past 11 years, major floods occurred in 1941, 1943, 1944, and 1945, with two floods in 1948 and two floods in June and July 1951. Damages from the last seven floods are estimated to total $22,609,000 on the main stem below Toronto Dam site. The principal losses are sustained by agricultural improvements and crops, urban developments in Neodesha,

Independence, and Coffeyville, Kans., and by the major railway and highway crossings in the valley. Interruptions to the normal movement of traffic on railroad and highway crossings as a result of floods cause large indirect losses to business and industries as a result of delays. Damages in the flood plain of the Verigris River below Toronto Dam during the flood of July 1951 are estimated to total $5,600,000.

Operation of the Toronto Reservoir during the July 1951 flood would have prevented $2,230,000 of the damages in the Verdigris River Basin, of which $900,000 are crop losses and $1,330,000 are losses to other properties.

Operation of the six-reservoir system in the Verdigris River Valley, of which Toronto Reservoir is an integral unit, during the flood of July 1951, which have prevented losses amounting to $6,800,000. Operation of the system of six reservoirs during the past 11 years would have prevented over 90 percent of damages sustained in the Verdigris River Basin from the seven major floods listed above, as well as losses from moderate or minor floods. In addition, major benefits would have been derived from the reduction of these floods on the Arkansas River downstream from the Verdigris River.

The United States Public Health Service has advised that a total of 10 municipalities having a combined 1940 population of 66,850 utilize 7,400,000 gallons per day from the Verdigris River or its tributaries below authorized reservoir projects of the Corps of Engineers. The two largest of these cities are Independence and Coffeyville, Kans. Two large refineries at the latter locality require about 25,000,000 gallons per day from the Verdigris River for their operations. (These two refineries will be protected from frequent flooding.)

During protracted drought periods, water shortages are critical, particularly because sewage effluent and industrial wastes discharged into the river make water treatment difficult, since the treatment plants are inadequate, or less efficient than desirable. The authorized reservoir projects, including Toronto Reservoir, have specific allocations of storage to augment low stream flows to provide the minimum flow recommended by the United States Public Health Service for alleviation of stream pollution and relief of critical water shortages. That minimum stream flow is also sufficient to provide water for stock and other farm purposes during these critical dry periods. Operation of Toronto Reservoir with the completed Fall River and Hulah Reservoirs would result in realization of the major portion of pollution abatement and water supply benefit attributable to the six-reservoir system in the Verdigris River Valley.

Benefit to cost ratio is 1.06 for the six-reservoir system in the Verdigris River Basin (Toronto, Neodesha, Fall River, Elk City, Hulah, and Oologah). Benefits have not been separately determined for the Toronto Reservoir.

The appropriation in the amount of $3,000,000 requested for fiscal year 1952 will provide funds for acquisition of land in the dam site area, initiation and completion of a portion of the earth embankment and excavation for spillway, construction of an administration and maintenance building to be utilized during construction for a field office, the initiation of relocations of railroads, highways, and utilities, construction of overlook shelter and initiation of other construction items.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Tuttle Creek Reservoir, Kans. | $79,132,000 | $213,100 | $5,000,000 | $73,918,900 |

*1951 appropriation.*—None.

*Authorization.*—1938, 1941, and 1944 Flood Control Acts.

*Location and description.*—The project contemplates the construction of an earth-fill dam with a chute type spillway on the left bank near the left abutment, on the Big Blue River about 12 miles above the mouth of the stream in Riley and Pottawatomie Counties, Kansas.

Height: 135 foot average.

Length: 7,200 linear feet.

Power installation: Provision for future power only.

Scheduled closure date: Fall of 1954.

*Operations*

| Item | Total cost | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Embankment and outlet works | $29,575,000 | | | $4,000,000 | $25,575,000 |
| Construction of spillway | 16,752,000 | | | | 16,752,000 |
| Administration and housing facilities | 553,000 | | | 400,000 | 153,000 |
| Land acquisition | 12,375,000 | | | 200,000 | 12,175,000 |
| Relocation of cemeteries, railroads utilities and municipal improvements | 16,456,000 | | | | 16,456,000 |
| Clearing reservoir area | 1,170,000 | | | | 1,170,000 |
| Reservoir management and public use facilities | 703,000 | | | | 703,000 |
| Planning and engineering | 1,548,000 | $213,100 | | 400,000 | 934,900 |
| Total | 79,132,000 | 213,100 | | 5,000,000 | 73,918,900 |
| Percentage of completion | | | | 7 | |

*Justification.*—Disastrous floods during June and July 1951 throughout the Kansas River Basin have brought forth overwhelming appeals for early construction of the Tuttle Creek Dam and other dams in this basin. The disastrous flood that inundated the Argentine, Armourdale, Central, and Fairfax industrial districts in Kansas City and the cities of Topeka, Manhattan, and Lawrence, would have been averted had the reservoir system proposed for the Kansas River Basin been in operation. Tuttle Creek Reservoir is the largest and one of the key reservoirs in this system. The discharge from the Kansas River during this flood was approximately twice the discharge from the record 1903 flood. Actual physical damages from this flood will approach, if not exceed, $1 billion. In addition to property damage, untold damages to the social life of these communities will result from this flood as many families that were already in moderate circumstances lost everything they owned and are undergoing untold hardship. Rail transportation serving areas west of Kansas City which contain important military facilities have been disrupted for more than 3 weeks. This flood has proved, unquestionably, that construction of necessary flood-control reservoirs and other improvements in this basin can no longer be delayed. Initiation of construction of this project is essential to avoid repetitious disruption of services to important military facilities in the Kansas River Basin.

The amount of $5,000,000 is the minimum amount with which construction of the project can be initiated and completed within the scheduled 5-year construction period.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Wichita and Valley Center, Arkansas River, Kans. | $13,731,000 | $2,163,000 | $500,000 | $11,068,000 |

*1951 appropriation.*—None.

*Authorization.*—Flood Control Act of June 22, 1936.

*Location and description.*—The project is located on the Arkansas and Little Arkansas Rivers and Chisholm Creek, in the immediate vicinity of Wichita and Valley Center, Kans. The flows of Chisholm Creek would be diverted across the Little Arkansas River at mile 7.5 to enter the Arkansas River at mile 760.0. The Little Arkansas River at Valley Center would be diverted through a floodway extending from mile 18.5 to the Arkansas River at mile 785.7, about 9 miles northwest of Wichita. Combined flows of the Arkansas River, Little Arkansas River, and Chisholm Creek would be diverted around Wichita by means of a floodway located in the Big slough area, intercepting Cowskin Creek about 5 miles southwest of Wichita and reentering the Arkansas River in the vicinity of Derby, Kans.

Average height of levees: 7.5 feet.
Length of levees: 91 miles.
Length of channel: 31 miles.
Width of channel: 900 feet to 2,600 feet.
Completion date: Fiscal year 1954.

*Operations*

| Item | Total cost | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Construction, engineering, and design | $619,300 | $478,300 | 0 | 0 | $141,000 |
| Construction: | | | | | |
| Completed work | 43,748 | 43,748 | 0 | 0 | 0 |
| Big slough-Cowskin floodway, parcel A, phase I | 428,981 | 428,981 | 0 | 0 | 0 |
| Big slough-Cowskin floodway, parcel A, phase II by continuing contracts | 620,000 | 0 | 0 | $300,000 | 320,000 |
| Complete seeding and fertilizing parcel A, phase I | 14,971 | 14,971 | 0 | 0 | 0 |
| Big slough-Cowskin floodway, parcel B | 2,205,000 | 0 | 0 | 0 | 2,205,000 |
| Arkansas River training levee | 630,000 | 0 | 0 | 0 | 630,000 |
| Little Arkansas River floodway | 1,050,000 | 0 | 0 | 0 | 1,050,000 |
| Chisholm Creek interception and diversion canal | 1,600,000 | 0 | 0 | 0 | 1,600,000 |
| Riverside levee | 90,000 | 0 | 0 | 0 | 90,000 |
| Relocations: | | | | | |
| Midland Valley R. R., parcel A continuing contract | 715,000 | 418,000 | 0 | 0 | 297,000 |
| Chicago, Rock Island & Pacific R. R., parcel A continuing contract | 1,150,000 | 649,000 | 0 | 0 | 501,000 |
| Missouri-Pacific R. R., parcel B by continuing contract | 1,930,000 | 75,000 | 0 | 0 | 1,855,000 |
| Atchison, Topeka & Santa Fe R. R., parcel B, continuing contract | 1,360,000 | 55,000 | 0 | 200,000 | 1,105,000 |
| St. Louis-San Francisco R. R., Little Arkansas floodway | 760,000 | 0 | 0 | 0 | 760,000 |
| Atchison, Topeka & Sante Fe R. R., Little Arkansas floodway | 177,000 | 0 | 0 | 0 | 177,000 |
| St. Louis-San Francisco R. R., Chisholm Creek interception and diversion canal | 147,000 | 0 | 0 | 0 | 147,000 |
| Atchison, Topeka & Santa Fe Ry., Chisholm Creek interception and diversion canal | 190,000 | 0 | 0 | 0 | 190,000 |
| Total | 13,731,000 | 2,163,000 | 0 | 500,000 | 11,068,000 |
| Percentage of completion | | 16 | 16 | 20 | 100 |

*Justification.*—The project will protect 47,000 acres of highly developed urban and rural lands on Chisholm Creek, Little Arkansas River, Arkansas River, Big Slough, and Cowskin Creek, with an estimated total population of 42,000. Industries located in the protected area include flour mills, wheat elevators, stockyards, packing plants, oil refineries, and numerous small machine shops which do subcontract work for Boeing, Beech, and Cessna Aircraft Cos. There are 72 plants located in the city of Wichita now working on subcontracts forB–47 parts of which about 25 percent are located in the flood plain. Five major transcontinental railroad lines meet at Wichita and there are 38 truck lines operating into the city. The Continental Bus System serves the area and the city is served by three major airlines having 26 national flights daily. The physical property within the flood plain of the protected area is estimated by local interests to have a present-day value of $250,000,000.

Major floods occurred at Wichita in 1944 and 1945 causing damages estimated at $2,500,000 for each flood, or a total of $5,000,000. Two major floods occurred in May, June, and July 1951. Damages sustained from the floods of May, June, and July, 1951, were $1,180,000 to nondefense properties, and $230,000 to crops. Losses to defense production, consisted of an estimated 15,360 man-days of time, equivalent to $184,000 in wages and other losses amounting to about $63,000. All of the above flood losses would have been prevented had the authorized Wichita and Valley Center project been in operation during the 1944, 1945, and 1951 floods.

Sedgwick County and the city of Wichita have set up an organization to acquire lands and carry out their obligations as to local cooperation. Construction work by the Federal Government on the East Branch interception and Wichita drainage canal portion of the project is complete and that portion of the project has been accepted by the city for operation and maintenance. Approximately 80 percent of the rights-of-way for the entire project has been purchased by local interests. Local contributions by the city of Wichita and Sedgwick County amount to about $3,000,000, of which about $2,000,000 has already been spent.

With the $555,000 requested for fiscal year 1952, the relocation of the Atchison, Topeka & Santa Fe Railroad will be initiated and construction on Big Slough-Cowskin floodway parcel A will be continued.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Oologah Reservoir, Verdigris River, Okla. | $33,040,000 | $471,000 | $1,500,000 | $31,069,000 |

*1951 Appropriation.*—None.

*Authorization.*—Flood Control Act of June 28, 1938, modified by River and Harbor Act of July 24, 1946.

*Location and description.*—The Oologah Dam site is located on the Verdigris River, 90 miles above its confluence with the Arkansas River, and about 10 miles northwest of Claremore, Rogers County, Okla. Project structure would include an earth-fill embankment and a gated concrete spillway. The project would be constructed initially for flood control with provisions for future power installation.

Height above stream bed: 117 feet.

Length: 3,482 feet including 472-foot concrete spillway.

Power installation: Initial, none; total, none. Ultimate, 2 units at 7,000 kilowatts; total 14,000 kilowatts.

Installation presently planned: Project to be constructed for flood control initially, with provision for future installation of power-generating facilities.

Scheduled closure date: June 1954.

*Operations*

| Item | Total cost (current estimate) | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| Construction, engineering, and design | $933,000 | $340,957 | ..... | $80,150 | $511,893 |
| General construction, including access road, clearing dam site, project buildings and utilities to dam site | 1,142,000 | 65,718 | ..... | 309,850 | 766,432 |
| Spillway, outlet works and accessories by continuing contracts | 12,435,000 | ..... | ..... | 610,000 | 11,825,000 |
| Reservoir development and public use facilities | 780,000 | ..... | ..... | ..... | 780,000 |
| Relocations | 6,425,000 | ..... | ..... | ..... | 6,425,000 |
| Clearing reservoir | 1,460,000 | ..... | ..... | ..... | 1,460,000 |
| Lands and damages | 9,865,000 | 64,325 | ..... | 500,000 | 9,300,675 |
| Total | 33,040,000 | 471,000 | ..... | 1,500,000 | 31,069,000 |

*Justification.*—The Oologah Reservoir is a unit in the system of six reservoirs in the Verdigris River Basin in Kansas and Oklahoma for flood control, supplemental water supply, pollution abatement, and other conservation uses. In addition, Oologah Reservoir is a unit in the multiple-purpose plan for development of the Arkansas River Valley for flood control, navigation, generation of hydroelectric power and other purposes. Operation of this project in conjunction with the recently completed Fall River Reservoir, located on a major upstream tributary of the Verdigris River in Kansas, and the recently completed Hulah Reservoir on a major lower basin tributary in Oklahoma, will provide urgently needed flood protection for fertile farm land and communities in the Verdigris and Arkansas River flood plains. Major areas in the Verdigris River flood plain have been abandoned or cropping practices changed to lower value crops due to high frequency and severity of flooding.

A total of 57 floods has occurred on the Verdigris River at Inola, Okla., during the past 29½ years and during the past 11 years major floods occurred in 1941, 1943, 1944, and 1945, with two floods in 1948 and two floods in June and July 1951. Damages from the last seven major floods are estimated to total $5,100,000 on the main stem below Oologah Dam site. The principal losses are sustained by agricultural improvements and crops, and by the highway crossings in the valley. Interruptions to the normal movement of traffic on highway crossings as a result of floods cause large indirect losses to business and industries as a result

of delays. Damages in the flood plain of the Verdigris River below Oologah Dam during the flood of July 1951 are estimated to total $2,385,000.

Operation of Oologah Reservoir during the July 1951 flood would have prevented all of the flood damages which occurred in the Verdigris River Valley below the dam site, a total of $2,385,000, of which $1,412,000 are crop losses and $973,000 are losses to other properties. Operation of the system of six reservoirs, of which Oologah Reservoir is an integral unit, during the past 11 years, would have prevented 80 percent of damages sustained in the Verdigris River Valley below Oologah Dam site from seven major floods listed above, which would amount to a total of $4,080,000 in damages prevented, as well as losses from moderate or minor floods. In addition, major flood benefits would have been derived from the reduction of these floods on the Arkansas River downstream from the Verdigris River.

Provision will be made in the initial development of Oologah Reservoir for penstocks for the later installation of power generating facilities at such time that the oil field is depleted in the upper reaches of the reservoir and the necessary funds are provided. The hydroelectric power draw-down storage would also ultimately provide the necessary minimum flows for navigation of the Arkansas and Verdigris Rivers to the vicinity of Tulsa (Catoosa), Okla.

The current benefit to cost ratio is 1.06 for the six-reservoir system in the Verdigris River Basin (Toronto, Neodesha, Fall River, Elk City, Hulah, and Oologah). Benefits have not been separately determined for the Oologah Reservoir.

The $1,500,000 requested for fiscal year 1952 will be applied to construction of the spillway, outlet works, and accessories, and to the clearing of the dam site, bringing utilities to the dam site and the construction of project buildings.

| Name of project | Total estimated Federal cost | Allotments to date | Tentative allocation for fiscal year 1952 | Additional to complete after fiscal year 1952 |
|---|---|---|---|---|
| Arkansas River and tributaries, Arkansas and Oklahoma (emergency bank stabilization) | $10,742,000 | | $4,100,000 | $6,641,000 |

*1951 appropriation.*—None.

*Authorization.*—1946 River and Harbor Act.

*Location and description.*—The project provides for canalization of the Arkansas and Verdigris Rivers by locks and dams for slack-water navigation from Catoosa, Okla., to the Mississippi River, a distance of about 480 miles, with a project depth of 9 feet and a minimum channel width of 250 feet on the Arkansas and 150 feet on the Verdigris. It provides also for the construction of multiple-purpose reservoirs and channel rectification, and bank stabilization work. The locks and dams will serve navigation by providing lock chambers 110 feet wide by 600 feet long on the Arkansas and 74 feet wide by 600 feet long on the Verdigris. The work proposed at this time is emergency bank stabilization at specified critical locations.

*Operations*

| Item | Total cost | Allocations | | | |
|---|---|---|---|---|---|
| | | Through 1950 | Fiscal year 1951 | Fiscal year 1952 | After fiscal year 1952 |
| 1. Dardanelle Rock to Reed's Ferry (mile 257.0 to 240.5), Ark | $800,000 | | | $500,000 | $300,000 |
| 2. White Bluff to Jefferson County Free Bridge (mile 130.0 to 115.6), Ark | 600,000 | | | 200,000 | 400,000 |
| 3. Bluff contact upstream Morrilton cut-off to bluff contact downstream Morrilton cut-off (mile 215.7 to 209.0), Ark | 452,000 | | | 310,000 | 142,000 |
| 4. Wilson's Rock to Missouri Pacific railway bridge at Fort Smith (mile 376.4 to 362.0), Ark.-Okla | 6,800,000 | | | 1,000,000 | 5,800,000 |
| 5. Plum Bayou to Rob Roy (mile 90.6 to 89.2), Ark | 750,000 | | | 750,000 | |
| 6. Medford (mile 38.8 to 38.3), Ark | 460,000 | | | 460,000 | |
| 7. Brunson's Crossing (mile 80.3 to 78.5), Ark | 580,000 | | | 580,000 | |
| 8. New Gascony (mile 83.0 to 80.8), Ark | 300,000 | | | 300,000 | |
| Total | 10,742,000 | | | 4,100,000 | 6,642,000 |

*Justification.*—Fertile agricultural lands, which have long been in production flank both sides of the valley of the Arkansas River below Catoosa, Okla. Thousands of acres have been protected against floods by levees. Many municipalities and various facilities adjoin or span the river. Throughout its history, however, the Arkansas River has been a meandering stream. This meandering has caused progressive caving of banks which, at many locations, threatens utilities, communities, and the entire regimen of the river. The most serious locations now under active attack by the river are described below with justifications for accomplishing emergency bank stabilization at those localities:

1. Dardanelle Rock to Reeds Ferry (mile 257.0 to 240.5), Ark.: Work required in this reach consists of the extension of an existing revetment upstream about 3,000 feet and downstream 5,500 feet in the vicinity of mile 252 to arrest erosion which is necessitating the set-back of a levee to maintain the integrity of the levee system. The annual value of the food and fiber crops produced in this area to be protected amounts to approximately $800,000.

2. White Bluff to Jefferson County free bridge (mile 130.0 to 115.6), Arkansas: Work required in this reach of the river consists of the placement of 2,000 feet of extra-heavy revetment along the right bank of the river opposite the Hensley Bar cut-off channel at mile 116.8. Erosion has been progressing for a considerable period of time and failure to arrest the erosion could result in damage to the Jack Bradley bank system and the federally constructed Tucker Lake levee project. The erosion at this location also constitutes a serious threat to the Jefferson County free bridge, which is the only highway crossing for a distance of 160 miles between Little Rock and the mouth of the Arkansas River. Food and fiber products crops produced within the Tucker Lake levee area had a value of $500,000 in 1950.

3. Bluff contact upstream Morrilton cut-off to bluff contact downstream Morrilton cut-off (mile 215.7 to 209.0), Arkansas: The work proposed at this reach is the placement of 2,000 feet of revetment along the left bank of the lower half of the cut-off, together with 1,400 feet of pile revetment and 300 feet of pile dikes extending out from the left bank of the natural river at a point about 4,000 feet from the entrance to the cut-off to train the flow into the cut-off channel. Construction of the Morrilton cut-off channel corrected an emergency condition heretofore existing. Recent high waters on the Arkansas River, however, have demonstrated the necessity for stabilization of the cut-off and training of the river flow into the cut-off channel. Failure to construct the stabilization work at this time would make it possible for the river to return to its old channel, thereby causing destruction of the federally constructed levee project for Conway County levee districts Nos. 1, 2, and 8, which protect approximately 14,500 acres of highly productive lands. The agricultural lands to be benefited by the proposed stabilization work produce food and fiber crops valued at $1,250,000 annually.

4. Wilson's Rock to Missouri Pacific Railway bridge at Fort Smith (mile 376.4 to 362.0), Ark.-Okla. The work proposed in this reach is construction of the permanent plan for stabilization of the entire 14-mile reach by revetment and pike dike construction. The work is to be initiated at Wilson's Rock and will extend progressively downstream until its completion, as funds are made available. In this 14-mile reach from Wilson's Rock to Fort Smith, the Arkansas River has meandered over large areas, continually changing its course and causing considerable damage to rich farm areas between those localities. The river has been severely attacking its right bank in the vicinity of Bradens Bend for many years, and has caused the abandonment of a branch line of the Kansas City-Southern Railroad, as well as the relocation of a Federal highway. The principal threat in this reach of the river is the possibility of a cut-off of the Arkansas River into the Poteau River. In the event of such an eventuality great flood damage would result in view of the entire inadequacy of the Poteau River Valley to carry Arkansas River flood flows.

5. Plum Bayou to Rob Roy (mile 90.6 to 89.2), Ark.: The work proposed at this reach is the placement of 6,500 feet of revetment along the left bank above the location of the St. Louis Southwestern Railroad bridge at Rob Roy, Ark. Immediately above this bridge are located eight natural gas pipeline crossings serving the St. Louis area and numerous towns in Arkansas. Active bank caving has been in progress in this sharp bend for several years, especially along the left bank. This caving has now progressed to the extent that the railroad bridge and the pipeline crossings will be jeopardized in the near future. Protection of these facilities is necessary at this time to permit the continuing flow of traffic over the Rob Roy bridge and to insure the uninterrupted supply of natural gas to important defense industries in the St. Louis area.

6. Medford (mile 38.8 to 38.3), Ark.: The work proposed at this location is the placement of 400 feet of revetment along the right bank immediately above the recently constructed Davis Lake pile dikes. The revetment work proposed at this time is designed to prevent the outflanking of the Davis Lake pile dike, which protects the controlling Arkansas River south bank levees, an integral unit of the Mississippi River protection system. The south bank levee affords protection to 1,280,000 acres of highly productive farm lands, numerous municipalities, railroads, oil and gas fields, and other developments. Bank caving at this location progressed 3,000 feet during the past year and rapid caving is still in progress.

7. Brunson's Crossing (mile 80.3 to 78.5), Ark.: The work proposed at this location is the placement of 5,000 feet of revetment along the left bank to arrest active bank caving which has been in progress for 2 years and has now left only 700 feet of foreshore between the river bank and the controlling levee along the north bank of the river. For immediate protection of the levee, 5,000 feet of revetment is required in 1952 to assure continued protection against the flooding of 568,000 acres of land, numerous utilities and municipalities.

8. New Gascony (mile 83.0 to 80.8), Ark.: Work proposed in this location is the placement of 3,500 feet of pile dikes along the left bank for a river distance of 2 miles. Erosion in this reach now is threatening the controlling north bank levee and has progressed to the extent that less than 600 feet of foreshore remains between the river bank and the levee. The flow of the river is now making a direct attack on the remaining foreshore and acceleration of the bank caving may be expected. Pile dikes proposed at this location are designed to arrest the bank erosion and will fit into the over-all bank stabilization plan for this reach of the river.

LOWER MISSISSIPPI RIVER FLOOD CONTROL

Senator McCLELLAN. If the $61 million is restored for the lower Mississippi, is there included in that $61 million the Des Arc levee project?

General CHORPENING. I don't think it is, sir.

Senator McCLELLAN. My impression was that it was not included.

General CHORPENING. I am positive it was not.

Senator ELLENDER. There is a sheet indicating how it is to be allocated.

Senator McCLELLAN. I know that sheet does not show it and I want to get it established.

General CHORPENING. It was not included.

Senator McCLELLAN. I will ask you also whether the extension of the White River levee is included?

Mr. Wilson Sharpe testified to it a few days ago, that the extension there would take $205,000 or $208,000, I believe, to complete it to afford the full protection. Is that included in the lower Mississippi, and would it be assured with the restoration of the $61 million for the lower Mississippi?

General CHORPENING. I want to check on that.

Senator McCLELLAN. I wish you would check on that and then give me for my own use justification slips for those two projects.

General CHORPENING. Yes, sir.

That piece of levee on the White River that you asked about was not included in the $61 million.

Senator McCLELLAN. So neither the Des Arc nor the extension of the White River levee is included, and, therefore, it would take a special authorization in the bill or an item in the bill in order for them to be appropriated for.

General CHORPENING. That is correct, sir.

Chairman McKellar. We will now hear from the Fish and Wildlife Service. The Senator from Oregon has a matter to take up with them.

General Chorpening. That is correct, sir.

### TOTAL DOLLAR AMOUNT OF FLOOD-CONTROL PROTECTION

Senator Cordon. General, sometime before this comes up, for my use, I would like to have the Corps' estimate of the total flood-control protection in dollars made by its flood-control works in the United States in the fiscal year 1951. I have seen them, for instance, in my own area. The floods have come. They take into account the amount of water that would have flooded had it not been for protection against the damage that was done when they had that kind of flood, and they come up with the actual savings. They come up with the flood damage that did not occur by virtue of flood-protection structures. If you have that or could get it, I would like to see it for the entire United States.

General Chorpening. I think that we can give you that total for ever since we have been building flood-protection works, and we can give it to you, I hope, up to June 30, 1950. We would not have the information for 1951 yet.

Senator Cordon. All right.

(The information referred to is as follows:)

### SUMMARY OF STATUS AND ACCOMPLISHMENTS OF THE FLOOD CONTROL PROGRAM

1. Floods occurred in the rivers of North America even when unbroken wilderness extended from the Atlantic coast to the Mississippi River, and when the native priaire grasses covered the western plains. De Soto found the Mississippi in flood when his expedition reached that stream at the present location of Natchez, Miss. Efforts to control and protect against floods began with the earliest settlements in the alluvial valley of the Mississippi; but flood control as a Federal activity is of comparatively recent origin. Large scale and effective Federal flood control operations in the Mississippi Valley date from 1928, and flood control on Nation-wide scale began in 1936 with passage by Congress of the first general flood control act.

2. In this brief period the Federal flood-control program has grown to become a major public works activity. In view of this rapid development and of the general lack of knowledge of the impact of this program on the national economy it desired to review the status and accomplishments of the flood-control program; to indicate its value as an investment of public funds, and its part in plans for development of the resources of the nation.

### II. THE FLOOD PROBLEM

3. Any appraisal of the Federal flood-control activities should be set against the background of the national flood problem, which led Congress to adopt flood control as a Federal activity. The area of the continental United States comprises the basins of over 160 separate rivers with their tributaries, and the valleys of innumerable small streams which flow directly to the sea, and to the Great Lakes. The waters of these rivers, and their fertile valleys, constitute one of the most important of our national resources. Floods on these rivers and streams, however, represent a serious economic loss to the Nation because of the large recurring damages which they produce, and because of the loss of floodwaters themselves which in many cases could be controlled and made to serve useful purposes. Flood problems exist in varying degrees in every State of the Union. These floods range in type from the slowly rising, long continued, inundations which formerly ravaged the lower Mississippi Valley, to the debris laden flash floods of southern California.

4. Flood damages which can be evaluated in monetary terms do not measure the total impact of floods upon the national economy but they are the best indication of the magnitude and distribution of the flood problem. The Corps of Engineers, under congressional directives, has studied this problem in practically every major river basin of the country and on many smaller streams. As a result of these studies estimates have been made of the flood damages, both direct and indirect, which would occur, based on the degree of river valley development prevailing generally at this time, and assuming that no flood control works were in existence. The following tabulation presents this estimate on an average annual basis, broken down according to major regions of the country; and in comparison shows the average annual flood damages prevented by Federal flood control works completed or in operation as of June 30, 1950.

| Area | Average annual flood damages | Average annual flood damage prevented |
|---|---|---|
| New England | $53,000,000 | $4,900,000 |
| North Atlantic | | 7,200,000 |
| South Atlantic | 32,000,000 | 8,400,000 |
| Lower Mississippi Valley | 247,800,000 | 225,100,000 |
| Upper Mississippi Valley | 65,300,000 | 4,600,000 |
| Ohio River Basin | 97,300,000 | 23,700,000 |
| Great Lakes Basin | 6,400,000 | 500,000 |
| Missouri River Basin | 54,600,000 | 2,800,000 |
| Gulf Southwest | 119,700,000 | 8,200,000 |
| Pacific Southwest | 101,800,000 | 12,700,000 |
| Pacific Northwest | 31,500,000 | 9,300,000 |
| Total | 809,600,000 | 307,300,000 |

5. The foregoing table shows that very substantial progress has been made toward alleviating the national flood problem, particularly in the lower Mississippi Valley. The table also shows that the flood problem remaining at this time is represented by a residual average annual flood damage of over $500 million. These estimates do not include any evaluation of the thousands of tons of topsoil eroded from farm lands or of the suffering, loss of life and hazard to orderly development produced by floods. Official figures compiled by the Weather Bureau of the Department of Commerce show a property loss averaging about $120 million annually for the period 1924–48; while the latest unofficial estimate of that Bureau for the year 1948 is $215 million. These figures are naturally lower than the estimates given above because over the period of record they reflect a considerably lower degree of river basin development than prevails at present, and because they do not claim to be a measure of all flood damages on all rivers of the country.

III. FLOOD-CONTROL PROGRAM

6. Status: The current Federal flood-control program includes all projects authorized by Congress to June 30, 1950. This program comprises over 1,200 projects located in 46 States (all States except Delaware and Maine) and in the District of Columbia, Alaska, and Hawaii. This program may be summarized as follows:

| Status of project | Number | Estimated Federal cost | Total cost to June 30, 1950 |
|---|---|---|---|
| Complete or in operation | 424 | $2,556,000,000 | $1,971,000,000 |
| Under construction | 150 | 2,541,000,000 | 797,000,000 |
| Authorized but not started | 640 | 4,511,000,000 | 26,000,000 |
| Total | 1,214 | 9,608,000,000 | 2,794,000,000 |

The cost of $2,794,000,000 to June 30, 1950, as given above includes maintenance and operation of completed projects. Appropriations by Congress for flood control through the fiscal year 1950 total $3,000,000,000. The difference of about $200,000,000 represents the amount which has been expended over the years under congressional authority for flood fighting; snagging and clearing of

flood channels; emergency repair of local flood-protection works; and for examinations, surveys, and contingencies.

7. Costs to date: The flood-control projects which are now operating to prevent floods and produce returns to the Nation are those which have been completed or which have been placed in operation although not fully complete. The costs to June 30, 1950, for this group of operating projects are shown on table No. 1. This table shows Federal costs plus costs which have been incurred by local interests in meeting the requirements of local cooperation prescribed by flood-control law. These costs may be summarized for the entire program as follows (through June 30, 1950):

| | Federal | Local | Total |
|---|---|---|---|
| First cost | $1,721,000,000 | $147,000,000 | $1,868,000,000 |
| Maintenance and operation | 250,000,000 | 52,000,000 | 302,000,000 |
| Total | 1,971,000,000 | 199,000,000 | 2,170,000,000 |

The foregoing comparison shows that as of June 30, 1950, local interests have paid for over 9 percent of the total cost of the flood-control program (including reservoirs). It should be noted, however, that this local share applies entirely to local flood protection works, as under the law reservoirs are constructed at Federal cost except where they serve as local flood protection works and some local cooperation is required in authorizing legislation. Since local flood protection works, among which is included the project for the alluvial valley of the Mississippi River, account for only about one-third of the cost of works complete or in operation, the actual local participation in local flood protection works to June 30, 1950 amounts to almost 30 percent of their total cost.

8. Accomplishments: (*a*) In order to determine the effectiveness of the flood control program the Corps of Engineers has compiled records of actual flood damages that have been prevented by flood control works now in operation; and of other benefits of these projects. A field appraisal of accomplishments of flood control projects to June 30, 1950, shows the following pertinent facts:

(1) These works afford flood protection to 861 cities and towns with an aggregate population in the protected areas of 3,034,000. Populations indirectly affected by the protective works are of course much greater.

(2) These works afford flood protection in varying degrees to over 26,000,000 acres of agricultural lands. The degree of protection varies as follows:

| | *Acres* |
|---|---|
| Full protection against the maximum flood of record | 17,200,000 |
| Good protection against all floods up to and including those of 10 years frequency | 5,200,000 |
| Partial protection reduction of flooding to permit higher agricultural use | 3,600,000 |
| Total | 26,000,000 |

(*b*) The benefits of flood control projects complete or in operation on June 30, 1950 may be summarized as follows:

(1) Benefits accumulated to June 30, 1950 (millions of dollars):

| | Flood damage prevented | Increased land use | Other benefits | Total |
|---|---|---|---|---|
| Flood control general | 738 | 145 | 57 | 940 |
| Mississippi River and tributaries | 5,372 | (1) | 463 | 5,845 |
| Total | 6,110 | 145 | 520 | 6,775 |

(2) Current estimate of average annual benefits (millions of dollars):

| | Flood damage prevented | Increased land use | Other benefits | Total |
|---|---|---|---|---|
| Flood control general | 86 | 17 | 16 | 119 |
| Mississippi River and tributaries | 321 | (1) | 58 | 279 |
| Total | 307 | 17 | 74 | 398 |

[1] No estimate.

9. Comparison of benefits and costs: (*a*) Mississippi River and tributaries: The great project for flood protection in the alluvial valley of the Mississippi River has already paid for itself many times over, and has thoroughly justified itself as a Federal undertaking. Flood damages prevented to June 30, 1950, which aggregate $5,372,000,000 are more than 5 times the total of Federal and local costs of $1,014,000,000 for the authorized project. Additional large benefits in transportation savings have resulted as the project combines flood control and navigation. No complete estimate has been made of the value of this project due to increased land use in the alluvial valley as the entire economy and productiveness of the 1,000-mile-long valley from Cape Girardeau, Mo., to the Gulf of Mexico is dependent upon protection afforded by this Federal project.

(*b*) Flood control general: The flood control general program, with the exception of the Sacramento, Calif., and Lake Okeechobee, Fla., projects authorized previously, dates in time of authorization from the Food Control Act of 1936. Actual construction of Nation-wide scope began in 1938; and the flood-control projects began to come into operation in 1940. Thus the general flood-control programs were about 10 years old at the end of fiscal year 1950. In this decade the cost of works completed or placed in operation, including both Federal and local costs, has been $1,156,000,000 (see table I); while the same works have already produced benefits aggregating $940,000,000 during the period. Thus these works, which were justified on the basis of a 50-year economic life have in 10 years repaid 81 percent of the cost of construction and maintenance and operation to date. If interest on the investment is included in the above costs (3 percent Federal and 3½ percent local), and the cost of completing the works is added, benefits accumulated to date will cover about 40 percent of the total economic cost. This indicates that the projects will have paid for themselves fully in 25 years; rather than in the 50-year period stated in their economic analysis and used as a basis for authorization to Congress.

(*c*) The economic value of the general flood-control projects completed or in operation may be expressed also by a comparison on an annual basis for the entire general flood-control program:

| | |
|---|---|
| Total average annual benefits | $119,000,000 |
| Total average annual charges | $60,500,000 |
| Benefit-cost ratio | 1.96 |

This comparison shows that as of the end of fiscal year 1950 the flood-control program has produced almost $2 of every dollar of cost.

(*d*) Many of the authorized flood-control projects were authorized during the prewar period 1936–40 when construction costs were much lower than at present. For example the Engineering News Record construction cost index shows a rise of over 100 percent since 1936. The question has therefore arisen as to whether flood-control projects authorized by Congress at lower price levels than now prevail are still economically justified as Federal undertakings. Flood-control benefits are a composite of many factors which rise and fall in dollar value in general accord with fluctuations in commodities such as agricultural products, structural materials, and land values. They do not necessarily increase proportionately with the rise in construction costs; and in some cases rise in value at a much greater rate due to special local conditions—such as when industries and housing developments occupy valley lands once used only for agriculture. The present benefit-cost ratio of 1.96 for all Federal flood-control projects now in operation indicates that these projects are well-justified. When these same projects were authorized by Congress the reports presented to Congress by the Corps of Engineers as a basis for authorization showed benefit-cost ratios averaging not more than 1.5 for the entire group. Since the current benefit-cost ratio of 1.96 is supported by records of actual flood damages prevented by more com-

plete knowledge of flood magnitudes and frequencies, and of present river basin development, it appears that these projects are proving to be an even better investment for public funds than was anticipated at time of authorization.

The cost of flood-control projects completed or in operation as of June 30, 1950, may be summarized as follows:

TABLE NO. 2.—*Costs of flood-control projects complete or in operation as of June 30, 1950*

| | Federal | Local | Total |
|---|---|---|---|
| (a) Cumulative to June 30, 1950: | | | |
| Flood control, general: | | | |
| First cost | $1,004,000,000 | $99,000,000 | $1,103,000,000 |
| Maintenance and operation | 30,000,000 | 23,000,000 | 53,000,000 |
| Total | 1,034,000,000 | 122,000,000 | 1,156,000,000 |
| Mississippi River and tributaries: | | | |
| First cost | 717,000,000 | 48,000,000 | 765,000,000 |
| Maintenance and operation | 220,000,000 | 29,000,000 | 249,000,000 |
| Total | 937,000,000 | 77,000,000 | 1,014,000,000 |
| For entire program: | | | |
| First cost | 1,721,000,000 | 147,000,000 | 1,868,000,000 |
| Maintenance and operation | 250,000,000 | 52,000,000 | 302,000,000 |
| Grand total | 1,971,000,000 | 199,000,000 | 2,170,000,000 |
| (b) Average annual charges: | | | |
| Flood control, general: | | | |
| Maintenance and operation | 5,376,000 | 3,013,000 | 8,389,000 |
| Amortization and interest | 47,700,000 | 4,450,000 | 52,150,000 |
| Total | 53,076,000 | 7,463,000 | 60,539,000 |
| Mississippi River and tributaries: | | | |
| Maintenance and operation | 15,000,000 | 3,014,000 | 18,014,000 |
| Amortization and interest | 51,800,000 | 3,060,000 | 54,860,000 |
| Total | 66,800,000 | 6,074,000 | 72,874,000 |
| For entire program: | | | |
| Maintenance and operation | 20,376,000 | 6,027,000 | 26,403,000 |
| Amortization and interest | 99,500,000 | 7,510,000 | 107,010,000 |
| Grand total | 119,876,000 | 13,537,000 | 133,413,000 |

NOTE.—The foregoing costs as of June 30, 1950, were prepared prior to completion of current estimates and are subject to correction upon completion of analysis of 6-year-program figures.

Chairman MCKELLAR. We will now hear from the Fish and Wildlife Service. The Senator from Oregon has a matter to take up with them.

## DEPARTMENT OF THE INTERIOR

### FISH AND WILDLIFE SERVICE

### STATEMENT OF WILLIAM HAGEN, Jr., ACCOMPANIED BY RUDOLPH DIEFFENBACH

#### TRANSFER OF FUNDS FROM CORPS OF ENGINEERS TO FISH AND WILDLIFE SERVICE FOR SALMON PROJECT ON THE COLUMBIA RIVER

Senator CORDON. I want to discuss the $1,740,000 to be transferred from the Corps of Engineers to the Fish and Wildlife Service in connection with work of the Fish and Wildlife Service in the States of Oregon and Washington in an attempt to work out a plan for saving the salmon life on the Columbia River.

The Corps of Engineers has listed here some seven items which it says will have to be eliminated if $140,000 is cut from the $1,740,000.

The first question is: Cannot some portion of that $140,000 be saved through a reduction of administration charges and so forth, without imperiling these seven projects?

Mr. HAGEN. Sir, we believe we have our administrative costs down to a minimum now.

Senator CORDON. Of course, that answer is the one that is given all the time. We have made reductions this year in your basic administrative service, so it is probably more nearly correct than it has been in the past.

With reference to these items, frankly, it appears to me when you have $1,740,000 estimated and when we are faced with the emergency we have, there ought to be some savings that could be effected out of that amount. What is your answer to that?

I do not want to hold up your job. I know that you have not had the amounts heretofore that had been set up in your plan. I understand those things. But, at the same time, this is rather a small reduction that the House made in $1,740,000, and I am hopeful that you can continue such projects as you have listed here to some extent, at least, even with the reduced funds.

I do not want you to pick out some projects and set them up to make a case, in other words.

ORIGINAL BUDGET ESTIMATE

Mr. HAGEN. Our original estimate was somewhere in the neighborhood of $3,000,000—$3,400,000.

Senator CORDON. That was for the Bureau of the Budget.

Mr. HAGEN. That is right, sir. That was to carry on our program and intending to complete the construction phase of the program prior to the construction of any further dams in the main stem of the Columbia River and the Snake River.

That is in accordacne with our program. We are trying to complete each unit in itself with appropriations, so that if we are cut we can still operate to some extent.

In other words, we have taken quite a cut here and we have reduced right down to the last project that has been started already. We believe these funds are required to complete these projects so that they can carry on the part of the work that is supposed to be done. It will not by any means complete what we should have had completed by even this year.

Senator CORDON. Do you get any cooperation from the two States in this work?

Mr. HAGEN. We have excellent cooperation from the States. They receive approximately one-third of the funds through the Fish and Wildlife Service to construct approved projects, such as hatchery stream clearance, fishways, et cetera.

Senator CORDON. They put in local money; do they?

Mr. HAGEN. They put in their own money; yes, sir. They put in substantial sums.

The State of Oregon, for example, each year spends approximately $75,000 on the screening of irrigation ditches and maintenance of those.

The States of Washington and Oregon also put in funds for research, which is not included in this program, by the way. The State of Washington has plans and is going ahead with those plans in the lower Columbia River, to expend approximately $2 million of their own money on these hatcheries. That is on hatcheries already existing.

Senator HAYDEN. I am at a loss to understand where the State of Washington gets its money back. The fish are not caught in that State, are they, alternately?

POUNDAGE FEE

Senator CORDON. I do not know about the State of Washington, but the State of Oregon has a poundage fee, and I think the State of Washington also has one.

Mr. HAGEN. That is correct. The State of Washington has a poundage fee, by which they get a fund. However, it is by a direct appropriation.

Senator CORDON. I think the poundage fee goes into the general fund in Oregon now. But there is a tax based upon the number of pounds of salmon caught even though they be caught in the ocean. It will still be caught in that State.

Senator ELLENDER. Are they processed and canned there?

Senator CORDON. Yes.

Senator MCCLELLAN. It is just like a severance tax.

Senator CORDON. Exactly.

Mr. HAGEN. In answer to that, 75 percent of the salmon from the Columbia River goes to the State of Oregon, while the State of Washington receives about 25 percent.

So your question is entirely reasonable in that, if they do not receive the benefits.

Senator HAYDEN. That is, that being further upstream, if the fish might be born in Washington originally, they come down the river and go out to the sea.

Senator CORDON. The main reason for that lies in the fact that there was room on the south side of the Columbia River at its mouth to build the city of Astoria, so that the fishermen are on the south side, which happens to be in the State of Oregon, while the north side is in the State of Washington. Otherwise there probably would be a big fishing center on the other side.

It just happens that the safe water and the bay and room enough to build, and a place for the canneries was all on the south side of the river. That puts the fishing interests on the Oregon side of the river.

Senator ELLENDER. Was it not John Jacob Astor who built that as a camp there for fur trapping and so on?

Senator CORDON. That is right. They have a big monument to the old boy. I do not know why, but they have it.

How much are you behind as a result of the cut in appropriations over the plan that was set up and agreed to by both States, the Fish and Wildlife Service and the Corps of Engineers and other interested

agencies when they set up their so-called basic 308 report, which was the basis for this?

Mr. HAGEN. If we receive $1,600,000 for 1952, we will be $5,500,000 behind schedule for the completion of the facilities prior to the construction of the dams.

Chairman MCKELLAR. Are there any other questions, gentlemen? We are very much obliged to you, sir.

(Thereupon, at 2:45 p. m., Wednesday, August 8, 1951, the committee recessed, to reconvene subject to call of the Chair. The committee was called to reconvene on Thursday, August 9, 1951.)